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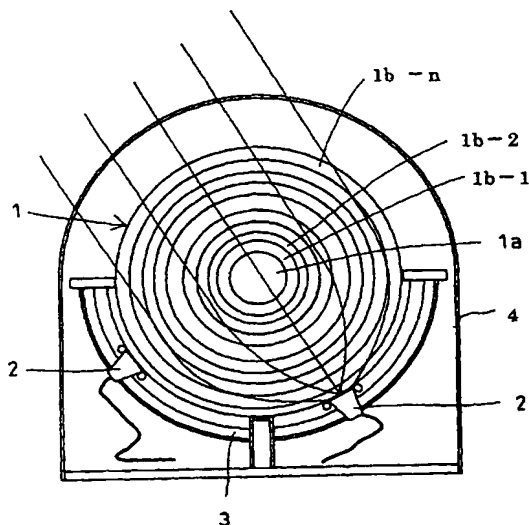
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添付公開書類:  
— 国際調査報告書

[続葉有]

(54) Title: LUNEBERG LENS AND PROCESS FOR PRODUCING THE SAME

(54) 発明の名称: ルーネベルグレンズおよびその製造方法



(57) Abstract: A Luneberg lens of monolayer structure or multilayer structure composed of a combination of two or more layers of different dielectric constants, the Luneberg lens produced by adding a blowing agent to a resin mixture obtained by mixing a polyolefin resin and/or a derivative thereof with an inorganic filler of high dielectric constant at a volume ratio of 99 to 50 (resin) : 1 to 50 (filler), pre-expanding the obtained mixture into pre-expanded beads and molding the pre-expanded beads, wherein at least a dielectric expanded layer of 1.5 or higher dielectric constant is formed of pre-expanded beads having undergone classification and screening and wherein the value of  $f(A)$  represented by the formula  $f(A) = \sigma a / A_{ave}$ , in which  $\sigma a$  is a deviation of gas volume fraction (Ar) in the dielectric expanded layer while  $A_{ave}$  is an average of gas volume fractions (Ar) at portions of the dielectric expanded layer, satisfies the relationship  $0.0005 \leq f(A) \leq 0.1$ .

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- (48) この訂正版の公開日: 2004 年12 月29 日 2 文字コード及び他の略語については、定期発行される各PCTガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。
- (15) 訂正情報:  
PCTガゼット セクションIIの No.53/2004 (2004 年12 月29 日)を参照

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(57) 要約:

ポリオレフィン系樹脂及び／若しくはその誘導体と高誘電率無機フィラーとを体積比で、樹脂 99～50：フィラー 1～50 の割合で混合した樹脂混合体に発泡剤を添加して予備発泡し、得られた予備発泡ビーズを成形して作られる単一の層構造、または比誘電率の異なる層を複数組み合わせた複層構造のルーネベルグレンズであって、少なくとも比誘電率 1.5 以上の誘電発泡体層が、分級選別した予備発泡ビーズで形成され、その誘電発泡体層中の気体体積分率  $A_r$  の偏差  $\sigma_a$ 、及び同層各部の気体体積分率  $A_r$  の平均値  $A_{ave}$  から、 $f(A) = \sigma_a / A_{ave}$  の式で表される  $f(A)$  が、 $0.0005 \leq f(A) \leq 0.1$  である。

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/002656

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl.<sup>7</sup> H01Q15/08, B29C44/00, C08J9/228, B29K23:00, C08L23:00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2004

Kokai Jitsuyo Shinan Koho 1971-2004 Toroku Jitsuyo Shinan Koho 1994-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2002-121310 A (Otsuka Chemical Co., Ltd.), 23 April, 2002 (23.04.02), Par. Nos. [0010] to [0044]; Figs. 1 to 4 & WO 2002/010266 A1 & EP 1310518 A1	1-5
A	JP 2001-316514 A (Achilles Corp.), 16 November, 2001 (16.11.01), Par. Nos. [0014] to [0034] (Family: none)	1-5
A	JP 2001-279014 A (Achilles Corp.), 10 October, 2001 (10.10.01), Par. Nos. [0011] to [0029] (Family: none)	1-5

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search  
01 July, 2004 (01.07.04)Date of mailing of the international search report  
20 July, 2004 (20.07.04)Name and mailing address of the ISA/  
Japanese Patent Office

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## INTERNATIONAL SEARCH REPORT

International application No.

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2001-250423 A (Achilles Corp.), 14 September, 2001 (14.09.01), Par. Nos. [0013] to [0035] (Family: none)	1-5
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A	JP 06-006126 A (Murata Mfg. Co., Ltd.), 14 January, 1994 (14.01.94), Par. Nos. [0007] to [0018]; Figs. 1 to 6 (Family: none)	1-5
A	JP 08-167811 A (Murata Mfg. Co., Ltd.), 25 June, 1996 (25.06.96), Par. Nos. [0007] to [0017] (Family: none)	1-5
A	JP 2002-197923 A (Murata Mfg. Co., Ltd.), 12 July, 2002 (12.07.02), Par. Nos. [0021] to [0047] & US 2002-0067317 A1 & FR 2815459 A1	1-5
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A	JP 07-022834 A (Murata Mfg. Co., Ltd.), 24 January, 1995 (24.01.95), Par. Nos. [0007] to [0012] (Family: none)	1-5
A	JP 03-179805 A (Murata Mfg. Co., Ltd.), 05 August, 1991 (05.08.91), Page 2, lower right column, line 15 to page 6, upper left column, line 9; Fig. 1; tables 1 to 5 & US 5154973 A1	1-5
A	JP 05-334934 A (Murata Mfg. Co., Ltd.), 17 December, 1993 (17.12.93), Par. Nos. [0010] to [0016]; Figs. 1 to 4 (Family: none)	1-5